

Claims

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- [c1] 1. A geometric harmonic modulation (GHM) communication system for communicating GHM signals on a power line of a reconfigurable network, the GHM communication system comprising:
a master controller¹³ connected to the power line for transmitting GHM signals on the power line;
a boundary component¹⁶ connected to the power line; and
a GHM addressable device connected to the power line between the master controller and the boundary component, the GHM addressable device defining a boundary of a network region based on the GHM signals transmitted over the power line.
- [c2] 2. The GHM communication system of Claim 1 wherein the master controller comprises a GHM transmitter for transmitting the GHM signals on the power line.
- [c3] 3. The GHM communication system of Claim 1 wherein the boundary component comprises a capacitor bank, and wherein the GHM addressable device further includes an impedance connected in series with the capacitor bank.
- [c4] 4. The GHM communication system of Claim 3 wherein the GHM addressable device comprises:
a GHM receiver for receiving GHM signals transmitted over the power line;
a microprocessor connected to the GHM receiver for interpreting the GHM signals; and
an addressable switching device connected to the microprocessor and the impedance, the microprocessor controlling opening and closing of said addressable switching device according to the GHM signals received from the power line.
- [c5] 5. The GHM communication system of Claim 1 wherein the boundary component comprises an underground cable, and wherein the GHM addressable device further comprises an impedance connected between the

GHM addressable device and the underground cable.

- [c6] 6. The GHM communication system of Claim 5 wherein the GHM addressable device comprises:
- a GHM receiver for receiving GHM signals transmitted over the power line;
 - a microprocessor connected to the GHM receiver for interpreting the GHM signals; and
 - an addressable switching device connected to the microprocessor and the impedance, the microprocessor controlling opening and closing of said addressable switching device according to the GHM signals received from the power line.
- [c7] 7. The GHM communication system of Claim 1 further comprising a local controller connected to the power line, the local controller comprises a GHM receiver and a GHM transmitter for receiving and transmitting GHM signals over the power line wherein the local controller is configured to define a boundary of another network region.
- [c8] 8. The GHM communication system of Claim 7 wherein the local controller further comprises a first modem and the master controller further comprises a second modem wherein the first modem and the second modem are communicatively coupled.
- [c9] 9. The GHM communication system of Claim 7 wherein the local controller further comprises a first radio frequency link and the master controller further comprises a second radio frequency link wherein the first radio frequency link and the second radio frequency link are communicatively coupled.
- [c10] 10. The GHM communication system of Claim 1 further comprising a plurality of meters coupled to the power line wherein each of said plurality of meter comprising a GHM receiver.
- [c11] 11. A method for reconfiguring a reconfigurable network on a power line, said method comprising the steps of:

transmitting a GHM signal on the power line;
receiving the GHM signal at a GHM addressable device;
interpreting the GHM signal at the GHM addressable device; and
establishing a network region in the reconfigurable network based on the
step of interpreting the GHM signal wherein the GHM addressable device
controls defining a boundary of the network region based on the GHM
signals transmitted over the power line.

[c12] 12. The method of Claim 11 wherein the boundary component comprises a
capacitor bank and the GHM addressable device comprises an impedance
connected in series with the capacitor bank and the GHM addressable device
further comprises an addressable switching device connected to the
impedance and wherein the step of establishing a network region comprises
activating the addressable switching device based on the step of interpreting
the GHM signal.

[c13] 13. The method of Claim 11 wherein the boundary component comprises an
underground cable and the GHM addressable device further comprises an
impedance connected to the underground cable and the GHM addressable
device further comprises an addressable switching device connected to the
impedance wherein the step of establishing a network region comprises
activating the addressable switching device based on the step of interpreting
the GHM signal.

[c14] 14. A GHM communication system for communicating GHM signals on a
power line of a reconfigurable network, the GHM communication system
comprising:
a master controller connected to the power line, the master controller
comprising a GHM receiver and a GHM transmitter for transmitting and
receiving GHM signals on the power line;
a local controller connected to the power line comprising a GHM receiver for
receiving GHM signals from the power line and defining a boundary of a first
network region based on the GHM signals transmitted over the power line;

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a boundary component connected to the power line; and
a GHM addressable device connected to the power line between the master controller and the boundary component, the GHM addressable device comprising:
a GHM receiver for receiving GHM signals transmitted over the power line;
and
a microprocessor connected to the GHM receiver for interpreting the GHM signals and defining a boundary of a second network region based on the GHM signals transmitted over the power line.

[c15] 15. The GHM communication system of Claim 14 wherein said master controller further comprises a message controller connected to the GHM transmitter and the GHM receiver and a message storage device connected to the message controller.

[c16] 16. The GHM communication system of Claim 14 wherein said boundary component comprises a capacitor bank and the GHM addressable device further comprises an impedance connected microprocessor and in series with the capacitor bank.

[c17] 17. The GHM communication system of Claim 16 wherein the GHM addressable device comprises an addressable switching device connected between the microprocessor and the impedance, the microprocessor controlling activation of the addressable switching device according to the GHM signals received from the power line to define the boundary of the second network region.

[c18] 18. The GHM communication system of Claim 14 wherein the boundary component comprises an underground cable and the GHM addressable device further comprises an impedance connected to the microprocessor.

[c19] 19. The GHM communication system of Claim 18 wherein the GHM addressable device comprises an addressable switching device connected between the microprocessor and the impedance, the microprocessor

controlling activation of the addressable switching device according to the GHM signals received from the power line to define the boundary of the second network region.

[c20] 20. The GHM communication system of Claim 14 further comprising a plurality of meter connected to the power line wherein each of the plurality of meters comprises a GHM receiver.

[c21] 21. A method for reconfiguring a reconfigurable network on a power line having at least one device, said method comprising the steps of:
receiving a signal from the power line;
determining if a dotting portion is present in the signal;
search for a message start word portion when the dotting portion is determined to be present;
synching on the message start word portion;
decoding the message from the signal;
analyzing an address portion of the decoded message; and
executing a command portion of the message at the at least one device when the address portion of the message is identical to an address of the at least one device.

[c22] 22. The method of Claim 21 wherein the device comprises a GHM addressable device.

[c23] 23. The method of Claim 21 wherein the device comprises a local controller.

[c24] 24. The method of Claim 21 further comprising the step of establishing a network region in the reconfigurable network based on the step of executing the command portion wherein the device defines a boundary of the network region based on the signals transmitted over the power line.

[c25] 25. The method of Claim 21 wherein the signal comprises a GHM signal.